

XERIC PIEDMONT SLOPE WOODLAND

Concept: Xeric Piedmont Slope Woodland is a rare woodland or open forest community of xeric microsites such as steep upper slopes on dry aspects, but with less continuous shallow soil, less bedrock, and denser vegetation than Piedmont Acidic Glade. It is dominated by drought-tolerant species, including *Pinus echinata*, *Quercus stellata*, *Quercus marilandica*, and *Quercus montana*, and either a dense shrub layer or an herbaceous layer of drought-tolerant and sun-loving species.

Distinguishing Features: Xeric Piedmont Slope Woodland is recognizable by a canopy composition more xerophytic than Dry Oak–Hickory Forest or Piedmont Monadnock Forest (*Quercus stellata*, *Pinus echinata*, *Quercus marilandica*, sometimes *Quercus montana*, without *Quercus alba* or more mesophytic species) in environments that don't have the characteristics of Piedmont Acidic Glade or Xeric Hardpan Forest. Sites are usually rocky, but dry slope aspect appears more important than continuous bedrock or shallow soil, and a clay hardpan is not present. Xeric Piedmont Slope Woodland is distinguished from Piedmont Acidic Glade by denser vegetation (open forest or fairly dense woodland if not recently disturbed), deeper soil, and limited role of rock. Xeric Hardpan Forest (Basic Rocky Subtype) has a xerophytic canopy in upper slope settings but occurs on mafic rock, has evidence of a dense or shrink-swell clay subsoil, and generally has abundant *Carya carolinae-septentrionalis*.

Synonyms: *Pinus echinata* - *Quercus marilandica* / *Kalmia latifolia* - *Symplocos tinctoria* Woodland (CEGL004446). This association is a marginal fit for the concept of this community type, which might almost as well be regarded as having no NVC analogue.
Ecological Systems: Southern Piedmont Dry Oak-(Pine) Forest (CES202.339).

Sites: Xeric Piedmont Slope Woodlands occur on steep or convex upper slopes that face west or south.

Soils: Soils may potentially be any dry acidic upland soil. The known examples are mapped as Georgeville (Typic Kanhapludult).

Hydrology: Sites are very dry due to strong solar heating and rapid drainage of rainfall from the steep convex slopes.

Vegetation: The vegetation is an open forest or woodland dominated by *Quercus stellata*, *Quercus montana*, and *Pinus echinata*, with *Quercus marilandica* abundant in the understory. Shrubs such as *Kalmia latifolia* or *Vaccinium arboreum* may be abundant. The herb layer, where shrubs are not dense, is dominated by grasses, primarily *Piptochaetium avenaceum* or *Danthonia spicata*. With more frequent fire, additional species such as *Schizachyrium scoparium*, *Tephrosia virginiana*, *Solidago odora*, and *Pteridium latiusculum* might be abundant.

Range and Abundance: Ranked G2? but much uncertainty remains about its abundance. It may be G1. It is known in North Carolina only in the most rugged part of the Uwharrie National Forest.

Associations and Patterns: Where it is known, Xeric Piedmont Slope Woodland occurs on the driest slope aspects and grades to Piedmont Monadnock Forest (Pine Subtype) on other dry slope

aspects and to Piedmont Monadnock Forest (Typic Subtype) on ridge tops and east-facing slopes. Piedmont Acidic Glade and potentially Dry Piedmont Longleaf Pine Forest occur as additional small patch communities in this landscape.

Variation: Variation is not well known at present.

Dynamics: Dynamics are not well known. The factors that produce this community where it occurs are presumed to be the very dry microsites, but steep south-facing slopes in other parts of the Piedmont do not appear to support this community. Fire probably is very influential, as it is in the other barrens communities, but occurrence in rugged topography may limit fire spread from surrounding landscapes.

Comments: This community is one of the least well understood in the 4th Approximation, and confusion remains about its true character and ecological affinities. The history of nomenclature illustrates the confusion. It was called Xeric Piedmont Pine Heath in earlier drafts of the 4th approximation. It was also called Piedmont Monadnock Forest (Xeric Subtype) at one stage. The synonymized NVC association is a poor fit for the observed vegetation of places identified as Xeric Piedmont Slope Woodland. It describes a dry or xeric woodland with a dense shrub layer suggestive of sheltering from fire, but the setting suggests an important natural role for fire. Further confusing the picture, *Quercus marilandica* is in the name but is not mentioned in the vegetation description. The vegetation, as described in the NVC, suggests a dry phase of Piedmont/Coastal Plain Heath Bluff. It was based on two rather different CVS plots.

The concept used in the Fourth Approximation is based on field observations of rocky acidic upper south-facing slope positions in the most rugged part of the Uwharrie Mountains, initially suggested by Alan Weakley and Allison Weakley (personal comm. 2011). Their observations, and the author's, are of vegetation that is not densely shrubby and has a fairly diverse herbaceous layer. The dense shrub layer in the xeric plots may be an artifact of fire suppression. At present, this rare community is not known outside of the southeastern Badin unit of Uwharrie National Forest, an area of unusually extensive and diverse development of dry, acidic communities. These communities are likely partially dependent on fire for their natural character. With more frequent burning, comparable to that which occurred in most Piedmont forests, these dry sites would have more open canopies, less shrub cover, and would support diverse herbaceous layers.

The relationship of this community to Dry Piedmont Longleaf Pine Forest also needs further clarification. The Mountain Variant of Dry Piedmont Longleaf Pine Forest occurs in similar topographic and geologic settings in close proximity to the known occurrences.

Quercus prinus - *Quercus stellata* - *Carya glabra* / *Vaccinium arboreum* - *Viburnum rufidulum* Forest (CEGL004416) is another xeric forest association, initially based on two other plots in the same vicinity. It could fit this type's concept as well but may alternatively fit Piedmont Acidic Glade better.

Rare species:

No rare species are known in this community.

References: